

## CLAIMS

1. A filter for the purification of an exhaust gas provided with a catalyst coat layer formed by carrying a catalyst active component on a surface of a porous ceramic carrier, wherein the porous ceramic carrier has a porosity of 40-80% and a thermal conductivity as a filter is 0.3-60 W/mk.

2. A filter for the purification of an exhaust gas according to claim 1, wherein the thermal conductivity of the filter is 3-60 W/mk.

3. A filter for the purification of an exhaust gas according to claim 1 or 2, wherein the catalyst coat layer is made of at least one oxide ceramic selected from alumina, titania, zirconia and silica.

4. A filter for the purification of an exhaust gas according to claim 1 or 2, wherein the catalyst coat layer contains at least one metal having a thermal conductivity higher than the oxide ceramic selected from copper, gold, silver and aluminum or an alloy thereof, or at least one ceramic selected from aluminum nitride, silicon carbide and silicon nitride.

5. A filter for the purification of an exhaust gas according to claim 1 or 2, wherein the catalyst coat layer is carried with at least one catalyst active component selected from a noble metal, an alkali metal, an alkaline earth metal and a rare earth oxide.

6. A filter for the purification of an exhaust gas according to claim 1 or 2, wherein the porous ceramic carrier is constituted with at least one ceramic selected from silicon carbide, silicon nitride, cordierite, mullite, sialon, silica, aluminum titanate, lithium aluminum silicate (LAS) and zirconium phosphate.

7. A filter for the purification of the exhaust gas according to claim 1, wherein the catalyst coat layer is made of at least one oxide ceramic selected from alumina, titania, zirconia and silica and contains a

substance having a refractive index larger than that of the oxide ceramic, and a thermal conductivity as the filter is 0.3-3 W/mk.

8. A filter for the purification of an exhaust gas according to claim 1, wherein the catalyst coat layer is made of at least one oxide ceramic selected from alumina, titania, zirconia and silica and contains a pigment colored itself, and a thermal conductivity as the filter is 0.3-3 W/mk.

9. A filter for the purification of an exhaust gas according to claim 7, wherein the substance having a refractive index larger than that of the oxide ceramic is at least one substance having a refractive index of not less than 1.4 and selected from  $\text{TiO}_2$ ,  $\text{BaTiO}_3$ ,  $\text{PbS}$ ,  $\text{Fe}_2\text{O}_3$ ,  $\text{CoCO}_3$  and  $\text{MnO}_2$ .

10. A filter for the purification of an exhaust gas according to claim 1, 7 or 8, wherein the catalyst coat layer contains inorganic powder having a peak in a portion that a reflectance against an electromagnetic wave of not less than 10  $\mu\text{m}$  is not less than 70%.

11. A filter for the purification of an exhaust gas according to claim 8, wherein the pigment is compounded so that a brightness of the catalyst coat layer as a whole is not more than 8.

12. A filter for the purification of an exhaust gas according to claim 1 or 8, wherein the pigment is at least one inorganic metal selected from iron oxide, copper oxide and a cobalt compound of  $\text{CoO} \cdot n\text{Al}_2\text{O}_3$  or  $\text{Co}_3(\text{PO}_4)_2$ .

13. A filter for the purification of an exhaust gas according to claim 1, 7 or 8, wherein the porous ceramic carrier is made of at least one ceramic selected from silicon carbide, silicon nitride, cordierite, mullite, sialon, silica, aluminum titanate, lithium aluminum silicate (LAS) and zirconium phosphate.

14. A filter for the purification of an exhaust gas according to claim 7 or 8, wherein the catalyst coat

layer is made of at least one oxide ceramic selected from alumina, titania, zirconia and silica.

15. A filter for the purification of an exhaust gas according to claim 7 or 8, wherein the catalyst coat  
5 layer is carried with at least one catalyst selected from a noble metal, an alkali metal, an alkaline earth metal and rare earth oxide.